

A Network Analysis of IT Governance Practices: A Case Study of an IT Centralisation Project

Hafizah Mohamad Hsbollah
UUM College of Business, Universiti Utara Malaysia
Email: hs.hafizah@uum.edu.my
UWA Business School, University of Western Australia
Email: 20789422@student.uwa.edu.au

Alan Simon
Nick Letch
UWA Business School, University of Western Australia
Email: alan.simon@uwa.edu.au, nick.letch@uwa.edu.au

Abstract

Information technology governance (ITG) practices rely on both human and nonhuman actors to support the creation of business value in organisations. The role of nonhuman actors in shaping the ITG practices has been given limited attention within the ITG literature. In proposing a model of ITG, this paper highlights the interplay of human and technological artefacts in shaping the ITG practices. Using a case study approach, this paper explores the relationship and interaction between ITG arrangements and IT infrastructure in an IT centralisation project conducted over a number of years in a university. The analysis from this study highlights how problems in aligning actors' interests and lack of appropriate strategies lead to a failure in establishing a stable ITG network.

Keywords

Information technology governance, IT infrastructure, actor network theory, ITG model, case study.

INTRODUCTION

The fundamental concept of information technology governance (ITG) has been discussed since the early 1960's (Brown & Grant, 2005) and yet there is no consistent and well established body of knowledge and skills related to ITG (Peterson, 2004). This is partly because the literature continuously focuses on the theoretical aspects of ITG that positively affect the strategic alignment, business value delivery, risk mitigation and IT performance. As a result, a gap exists between theoretical frameworks and contemporary practices of ITG (Ribbers, Peterson, & Parker, 2002). In this paper, we examine not only the practices of ITG but also how those practices emerge within organisations. The aim is to provide the answer to the missing link between the theoretical and practical in ITG implementation. The objective of this paper is to address the questions of how an organisation engages with ITG and how the interests in ITG arrangements and IT infrastructure become dynamically aligned.

The formation of ITG arrangements is frequently taken for granted. While literature acknowledges that each organisation has its own ITG arrangements and arrangements vary across organisations, this variation is seen as being due to factors such as the organisation's size, industry, business strategy and organisational structure (Brown & Grant, 2005; Sambamurthy & Zmud, 1999), as well as the availability of appropriate funding and IT resources. However, little attention has been paid to the foundation of how ITG emerges and the complexity that ties each element in the ITG together. This is important because the journey towards having a sound ITG implementation starts from the ITG actors and their dynamic interaction with technology. This paper addresses this issue by developing a conceptual model of how ITG is constructed in organisations. Based on a network analysis approach which draws on actor network theory (ANT) as a theoretical lens, the model is used to analyse how ITG emerges and in what circumstances stable ITG arrangements can be produced. The conceptual model is considered as a holistic model that links the interdependency between ITG arrangements that are structures, processes and relational mechanisms with IT infrastructure. The model provides an important basis to prevent ITG from being seen as a static model (Patel, 2004), which will impair the dynamism and uniqueness of ITG in organisations. We use this model to explore a case study of an IT centralisation project at University X.

This paper has been structured as follows. In the next section an overview of ITG is provided followed by an elaboration of a network analysis approach as the basis for the construction of the conceptual model for developing a stable ITG in organisations. Following this, the case study methodology, analysis and discussion of findings are presented.

INFORMATION TECHNOLOGY GOVERNANCE

Two major frameworks for understanding ITG implementation are prominent in the literature. Firstly, Weill & Ross' (2004) framework focuses on decision-making structures, alignment processes and communication approaches and provides a matrix of governance arrangements (business monarchy, IT monarchy, feudal, duopoly and anarchy) for ITG specific decisions. Secondly, Van Grembergen & De Haes (2009) framework highlights ITG arrangements of structures, processes and relational mechanisms. ITG structures focus on the roles and responsibilities of the IT/business committee, while ITG processes refer to the IT decision-making process and monitoring procedures. ITG relational mechanisms emphasise the active participation and collaboration of corporate executives, IT management and business management to facilitate the coordination of ITG structures and processes. Both Weill & Ross' and Van Grembergen & De Haes' frameworks suggest best practice in ITG to assist organisations in determining their goals and objectives with respect to ITG. Lasic and Heinzl (2011) however, claim that the outcomes from any ITG models are often descriptive and prescriptive, which reflects a lack of theoretical foundation of ITG. We concur with this perspective and contend that both Weill & Ross' (2004) and Van Grembergen & De Haes (2009) frameworks do not account for how ITG emerges in organisations. Our objective is to go beyond examining best practices of ITG and understand how ITG arrangements are emerging in organisations and the social and technical contexts in which ITG arrangements arise. We adopt Van Grembergen & De Haes' (2009) definition of ITG because their definition acknowledges the relationship between corporate governance and ITG, and stresses the importance of having well-balanced ITG arrangements in organisations. ITG processes, structures and relational mechanisms, need to be blended together in order to derive ITG value to assist in achieving the business' ultimate goal.

In this paper, we follow the dominant line of thinking that a holistic approach to ITG arrangements should be taken which considers the structures, processes and relational mechanisms of ITG (Van Grembergen & De Haes, 2008, 2009; Van Grembergen, De Haes, & Guldentops, 2004). Each of the ITG arrangements has a specific role and impact that needs to work in concert in order to generate an efficient ITG implementation. These ITG arrangements are heterogeneous in the sense that they consist of interdependent elements of humans, organisational processes and technology. ITG arrangements are the effect derived from the interaction between social and technological development in the ITG structures, processes and relational mechanisms. Thus, ITG arrangements are not only concerned with technological components, but also with their integration with social elements. Both social and technological elements are important because the commitment of the actors involved in ITG will shape the overall development of ITG arrangements for the organisation. ITG arrangements are not static but constantly evolve over time. The focus of this paper is to discuss the relationship between ITG arrangements with IT infrastructure to form a stable ITG in organisations.

IT INFRASTRUCTURE

ITG arrangements are set in place in order that firms can effectively manage the information infrastructure that facilitates continuing business operations. ITG also reflects organisations' commitment to allocate appropriate IT infrastructure for business' current and future development. Thus, the interaction between ITG arrangements and IT infrastructure serves as a foundation upon which to achieve business coherence and support the alignment of IT strategy and business strategy. We highlight Star and Ruhleder's (1996) "relational approach" to determining information infrastructure as central to definitions which go beyond a concentration on the material and objective aspects of infrastructure.

Hanseth and Monteiro (1998) and Hanseth (2000) explicate infrastructure as a socio-technical network, that is developed to support a wide range of organisational tasks and shared by a larger community of users and group of people. The concept of work infrastructure is further used to explain how infrastructure supports a field of work in an organisation (Hanseth & Lundberg, 2001). Pipek and Wulf (2009, p. 455) view work infrastructure as 'the entirety of devices, tools, technologies, standards, conventions, and protocols on which the individual worker or the collective rely to carry out the tasks and achieve the goals assigned to them'. Their definition addresses infrastructure as heterogeneous in the sense that it is not limited to the physical technological infrastructure, but also acknowledges the role of people who depend on it. We adopt this work infrastructure in our study because the definition acknowledges the contribution of actors and their activities in the infrastructure development. In this context, human and nonhuman actors analytically have the same role and responsibility in shaping the infrastructure.

When considering IT infrastructure development, organisations need to ensure that they have a proper plan and resources to ensure appropriate amount of investment. If the process is not governed carefully, organisations will expose themselves to risks such as investing infrastructure elements that are incompatible with the existing one. Hence, IT infrastructure does not develop in isolation to the ITG arrangements and needs to be seen as a part of overall ITG. The interaction between ITG arrangements and IT infrastructure can be explored through the lens of ANT because their development are not only limited to the critical role of technology, but it also

involves human and its social aspect. Therefore, ITG arrangements and IT infrastructure are considered as a socio-technological phenomenon that highlight the enabling and restricting role of IT in a sociotechnical process (Sarker, Sarker, & Sidorova, 2006).

RESEARCH FRAMEWORK

In drawing the relationship between ITG arrangements and IT infrastructure, we propose a model for understanding the complex and dynamic interrelationship between ITG arrangements and IT infrastructure in organisations (Figure 1).

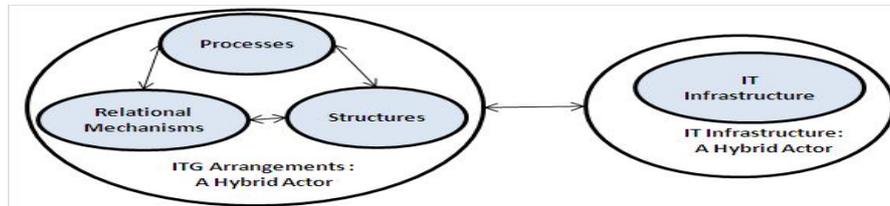


Figure 1: The ITG proposed model

Figure 1 above illustrates the proposed ITG model in organisations. We share Van Grembergen and De Haes' framework of ITG arrangements in part, but we propose a more comprehensive model that incorporates both technical and social perspectives. Van Grembergen and De Haes' model integrates ITG relational mechanisms which are derived from the social perspective with the ITG structures and processes. However, their model does not clearly articulate the role of technology in the ITG implementation. As a result, the framework does not provide its clear stance on whether ITG is technology, or socially driven, or both. Nor does it consider the actors' role in shaping the ITG arrangements. We argue that ITG is not just a technical process that embeds the technology to support and enhance business operations, but also a social process that involves participation from various stakeholders in organisations. Therefore, we apply ANT to the development of a model to guide ITG implementation in organisations.

The model highlights the four important elements of ITG – namely, the ITG structures, processes, relational mechanisms and IT infrastructure. In the context of ITG arrangements, actors may be hybrid (Callon, 1991) that can be a group of humans, text, methodology, or technical artefacts (Sarker, et al., 2006). Thus, ITG is a heterogeneous network that contains not only human, but also nonhuman actors. The model shows that the dynamic interactions among ITG actors (i.e. ITG structures, processes and relational mechanisms in ITG arrangements; and ITG arrangements with IT infrastructure) are essential to create a stable and durable ITG network. Through the principle of agnosticism (the analytical impartiality between all actors involved), generalised symmetry (every element should be treated with the same analytical vocabulary), and free association (the abandonment of all a priori distinctions between the technology and the social), ANT explains ITG as a texture of relations, or a network. Each actor, despite its means, roles, technical or non-technical characteristics, is equally important in shaping and influencing network formation in organisations.

Our model considers four aspects in relation to the ANT. This is important because ANT provides a conceptual framework to understand ITG practices without specifying which actors might be involved, the influencing factors and the impact that will emerge from the analysis. Hence, the model provides the flexibility in understanding the dynamics of relations between actors in the ITG network. The four aspects are as the following:

- i. The equal role of ITG actors without being concerned about whether the actors are human, nonhuman, technical or nontechnical. In this context, both human and nonhuman actors are treated in similar vocabulary and all priori in between them are eliminated.
- ii. The actors have their personal interests (Callon, 1986; Hanseth & Monteiro, 1998; Walsham & Sahay, 1999) and all interests need to be aligned in order for the network to become stable. We agree with Sarker, et al. (2006, p. 53), who explain that the interests of nonhuman actors 'can be equated to the interests that have been inscribed in it'.
- iii. The complexity of ITG actors and network. Actors can be viewed as a network or a network as an actor. ITG arrangements are an actor that has heterogeneous elements of structures, processes and relational mechanisms. At the same time, each of the ITG structures, processes and relational mechanisms is also an actor. For example, in the ITG structures network, the elements that reside in them consist of the IT steering committee and the role of the CIO.
- iv. The concept of punctualisation or a black box. The heterogeneous network can be treated as an individual actor to compensate for the complexity of the network (Law, 1992). In the proposed model,

the heterogeneous networks of ITG structures, processes, relational mechanisms and IT infrastructure are punctualised into black boxes and become an individual actor. We follow the contention that any network punctualisation should be thoroughly and cautiously done to prevent resistance in creating the network (Law, 1992). The black box also embodies a feature of irreversibility. For instance, IT infrastructure exhibits a property of irreversibility because it is an aligned network that inscribes the interests of the hybrid actors into a pattern of use (Monteiro, 2000).

In order to understand how the proposed model contributes to the understanding of the dynamic relationship between ITG arrangements and IT infrastructure, we demonstrate the case by using the four moments of the translation process (Callon, 1986) to study the controversy of the centralisation project at University X. The four moments of translation comprise of problematisation (how to become indispensable), interessement (how the allies are locked into place), enrolment (how to define and coordinate the role) and mobilisation (how actors can have legitimate speakers to avoid betrayal). A focal actor is the key actor, who drives the translation process by identifying the other relevant actors and their interests, establishing the obligatory passage point (OPP), negotiating with other actors to accept the OPP, using the device of interessement (strategies to win the negotiation process) and enrolling and mobilising actors in the new established network. The OPP refers to 'a situation or process that is specified by the focal actor such that all the relevant actors can achieve a shared focus in successfully pursuing the interests attributed to them' (Sarker, et al., 2006, p. 54).

RESEARCH APPROACH

This paper uses the proposed model in a network analysis of University X. By using an interpretive case study, various contexts of the elements of ITG arrangements and IT infrastructure and its association to one another are traced and explored. The case study strategy was chosen because of its ability to garner a detailed contextual analysis of the actors' natural settings. It also helped the researchers to obtain richer information to examine the social, technological, cultural and political influences on the centralisation project. Two data collection techniques are used in the case study to collect data to enable interpretation. These approaches are content analysis and in-depth interview. The in-depth interviews were conducted with twelve respondents who were directly involved in an IT centralisation project in University X. In collecting the data, the principal researcher applied the concept of *snowball sampling* by asking interviewees to identify other key actors who should be interviewed in relation to the purpose of the study. The researchers entered into a free relationship with the actors by allowing them to interpret the situation using their own language. In this context, information is created through the interaction between the researcher herself and actors by using guided interview questions. Researchers' understanding gathered from the content analysis has become part of the process that helps the social interaction with the interviewees. The interview stops when the information gathered reaches the point of saturation, or 'when the concepts are well defined and explained' (Corbin & Strauss, 2008, p. 145). This is achieved when the additional interviewees are not expected to reveal new information about the concept being explored (Cutcliffe, 2000). In addition, interviewees in this study were homogeneous (Guest, Bunce, & Johnson, 2006) in the sense that they were all involved in the IT centralisation project. Hence, twelve respondents were considered sufficient for this case study.

CASE STUDY: IT CENTRALISATION AT UNIVERSITY X

The University X is an old and well-established research-intensive university. The university has adopted a distributed responsibility principle (or devolved structure) to the whole campus since its founding. The devolved structure contributes to a better decision-making process and accountability of outcomes from the decisions made by the business units to support the university's governance. ITG arrangements at University X has been highly devolved, following the way the university has been traditionally governed and its culture of collegial self-determination. Under the devolved structure, faculties are given a significant level of operational autonomy, in both academic and budgetary controls. The Deans of the faculties have been given wide responsibility for managing their own resources, including IT to support their niche needs of the users. As a result, faculties had a devolved IT structure and maintained its development locally. Prior to 2006, the university had two layers of ITG. In the first layer, the university had two IT central administrative units that were responsible for general IT infrastructure, networking services and university communication systems. These units were the Administrative Computing Services (ACS) and University Communication Services (UCS). The ACS and UCS fell under the responsibility of the Executive Director of Finance and Resources (EDFR). The second layer comprised of the faculties that had developed their own IT infrastructure, with their own funding. The Deans of faculties had the ultimate power to make IT decisions and determine what would be the best mechanisms to support faculties' needs. However, the central IT administrations had no control over IT at the faculty level. Consequently, both ITG and IT infrastructure were not strategically developed, and there was significant duplication of IT infrastructure. The devolved IT structure resulted in several problems, such as lack of coordination and consistency in managing information, there was no standardisation on how IT decisions were made and different

states of IT across the campus. For example, a university-wide email system did not exist with each faculty maintaining their own email system and using multiple email platforms including Eudora, Outlook and internet-based email. At the same time, the central administration had its own email account and provided it to staff who need to access any administration systems, such as the payroll.

Phase 1: The Initiation Phase

The university conducted a review of the ACS and UCS in 2003. The review revealed that devolved IT resulted in IT infrastructure being under-resourced and affected the effectiveness and efficiency of IT services delivery. The Initiation phase started in 2004 after the appointment of its new EDFR. The EDFR pushed the idea having a central IT unit in the campus. The decision was driven by the ACS and UCS review report and based on her positive experience of centralised IT in previous organisations. The first effort at was the appointment of the IT Services Director and followed by the amalgamation of the ACS, UCS and IT Policy Office into one central IT unit. The new central IT unit was known as the Information Technology Services (ITS). At the beginning of 2006, the ACS, UCS and IT Policy Office were formally amalgamated into the ITS. After the establishment of the ITS, the Director took on the role of focal actor to drive the centralisation project. In the Initiation Phase, the Director stabilised the new ITS by relocating the “new” ITS staff (i.e. staff from the ACS and UCS), who had previously worked in various places across the university, to a central location with a new ITS management structure. The new ITS management structure included a Strategy and Governance (S&G) division that aimed at developing IT planning, policies and standards in the university. The Director together with the S&G established the ITS mission and developed a new IT strategic plan for the university. A new IT governing body of the IT Reference Group was also created for proper ITG structures in the university. In terms of relational mechanisms, the Director directed and coordinated the ITS transformation plan in accordance with the ITS mission.

Network Analysis of Phase 1: The Initiation Phase

In the Initiation Phase, the IT infrastructure, ITG structures, processes and relational mechanisms were punctualised actors with inscribed interests of the ACS and UCS. Thus, the ACS and UCS represented the IT infrastructure, ITG structures, processes and relational mechanisms in the IT centralisation negotiation process. Initially, the university faced difficulties in pursuing the idea of centralisation because of resistance from the ACS and UCS. It was evident when the amalgamation did not happen directly after the review. The EDFR, in order to win the negotiation process, used two devices of interessement. Firstly, the establishment of a new Information Technology Service (ITS) as a central IT body, and secondly, the appointment of an ITS Director. The interessement devices used by the EDFR successfully stabilised the identity of the ITS as the new central IT body in the university. Within a short time of a period (i.e. the appointment of the Director was in October 2005, and the amalgamation was in January 2006), the ACS, UCS and IT Policy Offices were amalgamated into the ITS.

Both the ACS and UCS were an aligned network that had punctualised actors of ITG structures, processes, relational mechanisms and IT infrastructure. The amalgamation process was complex because the punctualised ITG structures, processes, relational mechanisms and IT infrastructure were no longer durable. In this context, the elements for each of the punctualised actors needed to be opened so that their heterogeneous elements could be reconsidered. The establishment of the IT Reference Group, new ITS management group, ITS mission and IT strategic plan provide an example of reconsidering the elements of the ITG structures. The ITS Director at this point in time was not concerned with IT infrastructure. The focal actor, therefore overlooked the complexity within the punctualised IT infrastructure. The consequence of this oversight was encountered in Phase 2. Even so, the ITS became a durable network with a strong property of irreversibility. This was due to the political interference of the EDFR as the representative of the university and the strong device of interessement used in the negotiation process. The EDFR supported the establishment of ITS as a central IT body because she had previous positive experiences with organisations that implemented IT centralisation. The EDFR previously worked in a university that implemented IT centralisation and prior to that, she worked in one listed company for 23 years. Meanwhile the ITS Director previously worked in a for-profit organisation and shared the commercial view of how IT centralisation would provide better benefits to the university. Figure 2 below illustrates the use of the proposed model to visualise the Initiation Phase.

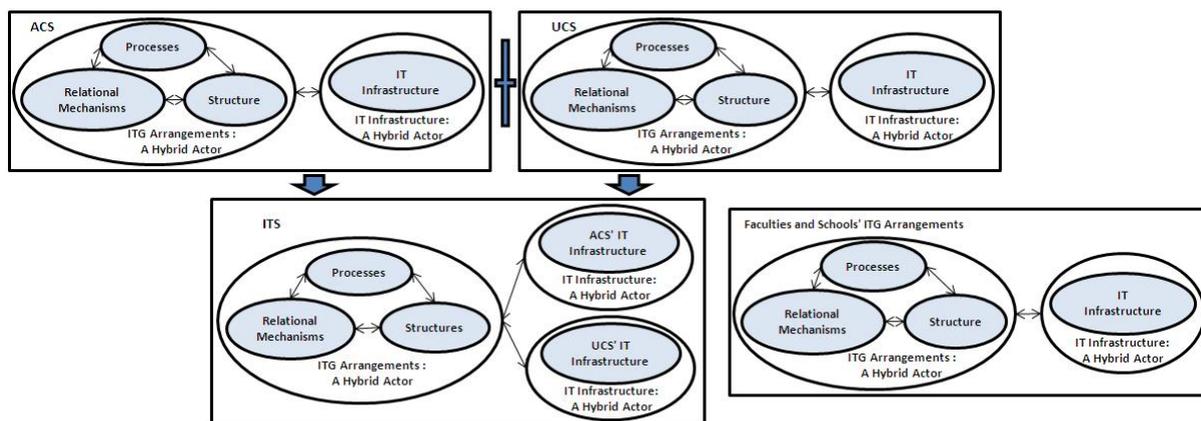


Figure 2: The Initiation Phase

Phase 2: Extending the Network

In the middle of 2006, the university conducted a review of its information management practices. The report of the review highlighted the disadvantages of the existing IT devolved environment. Examples were ineffective ITG mechanisms, lack of IT consistency and a silo mentality in the IT infrastructure. Thus, the ITS Director believed that the university should move away from the strongly devolved environment by re-centralising the core IT services. It was in line with the aim of the ITS to become the central hub that facilitates the development and implementation of standards across both centralised and devolved IT. To be able to centralise the IT services, the ITS needed to collaborate with the faculties. The devolved IT was not only among the faculties, but also within the faculties themselves. Faculties comprise a combination of cognate schools. Deans are accountable for administering the faculties, while the Heads of School are responsible for the schools within the faculties. The devolved structure implies that both of the faculties and schools separately maintained their ITG arrangements and IT infrastructure.

In Phase 2, the ITG structures focused on the replacement of the IT Reference Group with a new Information Management Board (IMB). The IMB role was designed to have a broader role as compared to the IT Reference Group and would be responsible for coordinating and approving information management policy and projects, as well as advising the Vice Chancellor on resources required for the approved IT projects. The IMB was one of the ITS transformation plans to set up a proper ITG in the university. At this stage, the focal actor focused on the new IT Strategic Plan as part of the restructuring plan for the ITG processes. The new IT Strategic Plan was released in early 2007 and it mainly addressed the role of IT to support the university's core businesses. The plan also articulated the need to have a centralised IT service model for the university to fully maximise its limited IT resources so that the university could achieve greater benefits and efficiencies. At this stage, there was no clear evidence that the ITS was considering developing new university-wide IT policies.

The effort towards the centralisation project was continued when the ITS started to develop a business case for the Core Infrastructure Program (CIP) in 2007. The CIP aimed to provide a set of core standardised IT services on a central platform to the faculties, schools and business units. In the first phase of the investigation and assessment to produce the CIP Business Case, the ITS worked collaboratively with the faculties by inviting all IT Managers to participate in the project. The ITS used meetings and workshops as a platform to obtain feedback and drafted the required details for the CIP Business Case. The investigation and assessment took six months to complete and the CIP Business Case was presented to the IMB for approval. However, the CIP involved a significant amount of budget and resistance from the faculties that resulted in a barrier to its implementation.

Network Analysis of Phase 2: Extending the Network

In Phase 2, the focal actor defined its OPP as to re-centralise IT services and develop ITS as the central IT hub in the university. The OPP was embedded in the IT vision and mission that was released in early 2007. The entry of a new actor (i.e. the faculties) was important to extend the existing ITG network. During the problematisation stage, the focal actor was unable to identify the identity of actors and their interests due to the impact of inattentive punctualisation. The establishment of the OPP requires a substantial change to the existing alliance of ITG network. Hence, any punctualised networked actors were needed to be opened for the content to be reconsidered. The existing ITG processes, structures, relational mechanisms and IT infrastructure were punctualised actors, and a legacy from the previous ACS and UCS. The faculties were also a punctualised actor that had their own ITG arrangements and IT infrastructure. However, the focal actor did not clearly identify the

identity and interests of the faculties and the network it supposedly simplified. As a result, the centralisation project did not obtain sufficient buy-in from the faculties.

After the establishment of the ITS, the university had approximately twenty individual IT services departments, which included the ITS, library, faculties and schools' IT divisions. Each of the individual IT departments had their own IT infrastructure that operated independently. ITS infrastructure was a punctualised actor that inscribed the interests of the previous ACS and UCS. The interests of the ITS infrastructure were temporarily not aligned with other individual IT services departments. In order to redefine the interests of all individuals' IT infrastructures, the CIP business case was developed. The CIP aimed to pursue four core infrastructure projects to develop the foundation of central IT services. At this point, by completing the four projects, all faculties and ITS would share the same IT infrastructure for achieving the OPP. However, due to the resistance of the faculties to accept the OPP, the project could not take place.

The existing ITG arrangements and IT infrastructure in the faculties embedded the devolved culture of the university that promote the collegial style of management. When the focal actor established the OPP, there was no clear information on how it could be achieved in terms of what services would be best maintained centrally and locally in the faculties. Interviewee #2 noted, *"people had different views on what centralisation meant... But I think that was never really clearly spelled out... people were allowed to have a really different view what it actually meant"*. Interviewee #6 said that, *"there was no understanding of why we need to do this and the ITS had not done a good enough job of selling the idea of centralisation"*. Therefore, from the faculties' point of view, centralisation required them to hand over their ITG arrangement and IT infrastructure to the central IT. They would lose some amount of power and would not be able to do certain things because handling over to ITS meant they were required to comply with the central IT structure model. Even though the faculties were invited to participate in the meetings and workshops during the CIP business case development, they were still reluctant to accept the predefined OPP. Further analysis shows that the central issue was due to communication and leadership problems. At first, the ITS invited all IT managers in the university to participate. The interests of these groups were defined to represent their faculties. Inadequate understanding of the culture was evident in the way the meetings and workshop took place. Two-way communication was a part of the collegial tradition that promotes collaborative work between the devolved units in the university, but during the negotiation phase, two-ways communication was not promoted. For instance, Interviewee #3 explained, *"the Director told us what he was going to do and this is what going to happen... always one way"*, and Interviewee #4 added, *"... it isn't just them talking to us... it is about allowing us, whoever we are, to say something... very little of that to my understanding"*. The communication problem led to the leadership style of the focal actor in winning the negotiation process. Interviewee X5 reported, *"the approach that was taken was far too draconian... the Director took a much more tyrannical and dictatorial view of how IT should be managed"*. Interviewee X2 noted, *"... meeting was held and discussion was taken... email was sent out ... so the formal structure of communication was there, but the tone and the content of the structure was totally unsympathetic and arrogant..."*. In this context, the actors felt that they were asked to follow the direction listed by the focal actor and their opinion was not considered during the negotiation process. Figure 3 below illustrates the use of the proposed model to visualise the extending the network phase.

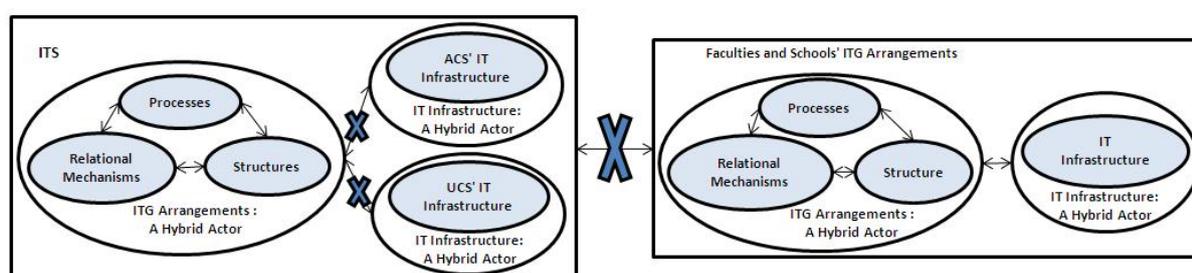


Figure 3: The Extending the Network Phase

Due to the devolved IT environment and unique needs of the faculties' users, the aim of the ITS to re-centralise IT services and act as a central IT hub to the university was seen as controversial. Interviewee #2 articulated the reason for resistance, *"...their contribution (IT Managers) was not really listed or valued... the consultation was just a window dressing... but it was not really the consultative process in any real sense... It was not that the IT community did not want to support or to see change... IT Managers around the university were positive and helpful and wanted to see change... it was what they (the ITS) were proposing (IT centralisation) was just not appropriate..."*. In addition, the plan to re-centralise IT services through the CIP was expected to be completed within two years. Interviewee #2 added, *"... lack of understanding of the university's culture and they were trying to move too quickly and too fast..."*. In response to this issue, Interviewee #5 explained, *"... the change was enormous... I think it was a very big change for everybody to grasp and accept straight away"*. In summary, the negotiation process that took place between the focal actor and the other actors was not successful.

The focal actor failed to be indispensable to the other actors, and subsequently he resigned. The focal actor betrayed the network formation effort that resulted in the failure of the new actor network formation. Reflecting on the betrayal of the ITS Director, Interviewee #2 said, “*that person faced strong difficulties to push the change, met a lot of resistance, and that resistance caused his downfall ... so he resigned*”.

DISCUSSION

We reflect the analysis of IT centralisation project in two phases. In Phase 1, the first attempt at IT centralisation was successful with the establishment of the ITS. Given the collegiality culture that promotes the decision making process through a wide range of committees in a consultative manner, the university had discussed the need to have proper ITG since 1998. However, the process to achieve IT centralisation was not in place until the appointment of the new EDFR in 2004. The EDFR, or the *primum moven*, had driven the change and successfully enrolled the ACS and UCS into the new network by using two devices of interest, namely the establishment of ITS and the appointment of ITS Director. The establishment of the ITS resulted in the betrayal of the ACS and UCS in their original network because both units were forced to abandon their existing alliances. The ACS and UCS did not have the power to protect their original network and needed to follow the new interests inscribed on them by the EDFR. The analysis shows how the mechanics of power are stabilised in managing the controversy (i.e. the establishment of ITS as IT central unit) by using appropriate devices of interest. Even though the IT infrastructure appeared as punctualised actors that were taken for granted (i.e. the elements resided in the black boxes were not considered by the ITS Director), the ITS still became a durable network with a strong property of irreversibility. In this context, it was impossible for the ACS and UCS to go back to their original network. With this strength property in hand, the ITS and its Director became the university’s spokesperson for the centralisation project.

After the ITS established its identity as the central IT unit, in Phase 2, it extended the centralisation project by enrolling the faculties in the ITG network. The involvement of the faculties was important because they are the main actors that support the core business of the university (i.e. teaching and learning). However, the centralisation project did not receive sufficient buy-in from the faculties. Four themes emerged from the data analysis that led to the failure. The discussion is organised separately for individual themes, but the analysis should be viewed as a holistic and continuous process. This continuous view is essential because each actor was also a simplified network, that interrelated to, and was equally important in the translation process for extending the ITG network.

Failure to align the interests of actors. The OPP enlisted by the focal actor was aligned with the university’s IT vision and mission. It can be seen from the selection of words used in the vision and mission, such as integrated, whole-of-university approach and a university-wide IT environment. However, the details of the OPP were not clearly cascaded down. During the problematisation stage, the identity and interests of the faculties as a punctualised actor was not clearly identified by the focal actor. The identification of the identity and interests of the faculties was complex because they were a relatively stable network with irreversible interests for the devolved governance. The lack of recognition of the cultural impacts also made the negotiation process unsuccessful. As a result, the other actors translated the OPP differently and made the alignment of interests processes difficult. The identification of the interests of nonhuman actors, such as the ITG processes and their elements, was not emphasised. For instance, the IT Strategic Plan was developed to provide guidelines on how IT could be used to support the university’s core business. The strategic plan listed twenty-five priorities to be achieved in three years that was too ambitious for a university. Nevertheless, the plan did not articulate which of the IT services and infrastructure was to be provided centrally or by the faculties.

Limitation on the devices of interest. Interest is the groups of action taken by the focal actor to stabilise the identity of other actors he defined in the problematisation stage. The devices of interest could be used as intermediaries to lock the actors’ interests. Yet, there was no clear device of interest that could be used in Phase 2. The IT mission and vision can be a useful intermediary, but the importance of the mission and vision and why it should be achieved were not cascaded down to the faculty level. Lack of understanding on the IT vision and mission resulted in misinterpretation of the OPP. The ITS and its Director did not use appropriate language to lock in the interests of other actors. Within the devolved structure, the word *centralisation* would bring negative connotation because of its association with losing power to make any important decision and job loss. In order to win the negotiation process, an appropriate language should be used as an intermediary, such as collaboration and partnership. In addition, strong IT policies that could be adhered to by all actors did not exist. The devolved structure embeds a strong property of irreversibility that would render such reversal nearly impossible. Thus, having a clear IT policy that is endorsed by the university’s governing body would compensate for the extended devolved structure at the faculty level. IT policy could become a powerful artefact that inscribes the interests of all actors and dictates patterns on how centralisation could be achieved.

Limitation on the role of the focal actor. The leadership style of the focal actor was seen as autocratic because he did not utilise the role of communication in the negotiation process. The action taken by the ITS Director was in contradiction to the role of focal actor described by Sarker et al., (2006, p. 55) who explain, 'the focal actor does not necessarily strive to create an alliance with identical interests; rather, the intent is to have allies with interests that are aligned with'. Analysis showed that prior to his position, the ITS Director was a project manager in the Financial Services unit for financial system upgrade in 2003. In 2005, he was appointed as the ITS Director. He was relatively new to the university; hence, his leadership style was seen as problematic because it was not compatible with the university's culture.

The impact of inattentive punctualisation. The focal actor neglects the IT infrastructure and ITG relational mechanisms by treating them as black boxes during the negotiation process. The ITG relational mechanisms and IT infrastructure began to show their complexities when the focal actor wanted to lock them into the OPP. For instance, the focal actor took the ITG relational mechanisms for granted, by adopting a one-way communication technique, which then led to conflict in managing the perception and interests of other actors. In relation to the IT infrastructure, both ITS and faculties had their own infrastructure that involved people, technologies and devices to support daily operation. The impact of the inattentive punctualisation was visible when the faculties became reluctant to accept the OPP. It is because designing central IT infrastructure not only involves consideration on the technical, financial, installed base and compatibility of the legacy system, but also its linkages with ITG structure (i.e. a committee which approves the infrastructure decision).

CONCLUSION

This paper extends the concept of ITG arrangements introduced by Van Grembergen and De Haes and highlights the dynamic relationship between ITG arrangements with IT infrastructure that includes the social and technological perspectives. Our proposed model is developed from an ANT perspective and offers a unique approach to extend the understanding of ITG practices. It suggests ITG practices as a complex phenomenon that requires researchers to revisit their approach in studying ITG in the future. We demonstrated the use of the proposed model in an IT centralisation project using the four moments of the translation process. This case, particularly the failure to develop a new centralised ITG network, captures the effect of inattentive punctualisation. It further suggests that oversights of the roles of human and nonhuman actors contribute to the conflicts that render to the failure in developing a stable network. This study thus contributes to the ITG literature by providing support for the view that the relationship between ITG arrangements and IT infrastructure are not static. In particular, the interactions between ITG arrangements and IT infrastructure appear as dynamic actors that constantly change through the process of alignment of interests. This paper therefore, acknowledges that a network becomes unstable with the entry of new actors and desertion of existing actors.

This paper also contributes to the understanding of how the dynamic interaction between ITG arrangements and IT infrastructure conduce to the success or failure for the ITG. This contribution is important because prior research on ITG practices has not considered both the role of technology (e.g. IT infrastructure) and the social in shaping ITG arrangements. One of the key features includes the role of nonhuman actors as part of the social. Hence, to better understand the societies, this study suggests the need to understand the role of technology in shaping the societies as well. This strongly suggests that ITG development is highly complex and this paper offers new insight on how ITG can be studied. We conclude that similar to the human actors who have personal attributes, technological artefacts (i.e. nonhuman actors) also have their own characteristics and history that contribute to the understanding of why ITG phenomenon occurs. The failure to develop good ITG practices can therefore be related to a failure to acknowledge the history of the actors and their contribution.

REFERENCES

- Brown, A. E., & Grant, G. G. (2005). Framing the frameworks: A review of IT governance research. *Communications of the Association for Information Systems*, 15, 696-712.
- Callon, M. (1986). Some elements of a sociology of translation: Domestication of the scallops and the fishermen of St Brieuc Bay. In J. Law (Ed.), *Power, action and belief: A new sociology of knowledge* (pp. 196-233). London: Routledge & Kegan Paul.
- Callon, M. (1991). Techno-economic networks and irreversibility. In J. Law (Ed.), *A sociology of monsters: Essays on power, technology and domination*. London: Routledge.
- Corbin, J., & Strauss, A. (2008). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (3rd ed.). California: Sage Publication, Inc.
- Cutcliffe, J. R. (2000). Methodological issues in grounded theory. *Journal of Advanced Nursing*, 31(6), 1476-1484. doi: 10.1046/j.1365-2648.2000.01430.x

- Guest, G., Bunce, A., & Johnson, L. (2006). How Many Interviews Are Enough? *Field Methods*, 18(1), 59-82. doi: 10.1177/1525822x05279903
- Hanseth, O. (2000). The economics of standards. In C. Ciborra, K. Braa, A. Cordella, B. Dahlbom, A. Failla, O. Hanseth, V. Hepso, J. Ljungberg, E. Monteiro & K. A. Simon (Eds.), *From control to drift: The dynamics of corporate information infrastructures* (pp. 56-83). New York: Oxford University Press
- Hanseth, O., & Lundberg, N. (2001). Designing Work Oriented Infrastructures. *Computer Supported Cooperative Work*, 10, 347-372.
- Hanseth, O., & Monteiro, E. (1998). *Understanding Information Infrastructure*. Retrieved from <http://heim.ifi.uio.no/oleha/Publications/bok.pdf>
- Law, J. (1992). Notes on the theory of the actor-network: Ordering, strategy, and heterogeneity. *Systemic Practice and Action Research*, 5(4), 379-393. doi: 10.1007/bf01059830
- Lazic, M., & Heinzl, A. (2011). *IT Governance And Business Performance-A Resource Based Analysis*. Paper presented at the Pacific Asia Conference on Information Systems (PACIS). Retrieved from <http://aisel.aisnet.org/pacis2011/103>
- Monteiro, E. (2000). Actor-Network Theory and Information Infrastructure. In C. Ciborra, K. Braa, A. Cordella, B. Dahlbom, A. Failla, O. Hanseth, V. Hepso, J. Ljungberg, E. Monteiro & K. A. Simon (Eds.), *From control to drift: The dynamics of corporate information infrastructures* (pp. 71-83). New York: Oxford University Press.
- Peterson, R. R. (2004). Integration Strategies and Tactics for Information Technology Governance. In W. Van Grembergen (Ed.), *Strategies for Information Technology Governance* (pp. 37-80): Idea Group Publishing, USA.
- Pipek, V., & Wulf, V. (2009). Infrastructuring: towards an integrated perspective on the design and use of information technology. *Journal of the Association for Information Systems*, 10(5), 447-473.
- Ribbers, P. M. A., Peterson, R. R., & Parker, M. M. (2002). *Designing information technology governance processes: diagnosing contemporary practices and competing theories*. Paper presented at the The 35th Annual Hawaii International Conference on System Sciences, Retrieved from IEEE Xplore.
- Sambamurthy, V., & Zmud, R. W. (1999). Arrangements for Information Technology Governance: A Theory of Multiple Contingencies. *MIS Quarterly*, 23(2), 261-290.
- Sarker, S., Sarker, S., & Sidorova, A. (2006). Understanding Business Process Change Failure: An Actor-Network Perspective. *Journal of Management Information Systems* 23(1), 51-86.
- Star, S. L., & Ruhleder, K. (1996). Steps Toward an Ecology of Infrastructure: Design and Access for Large Information Spaces. *Information Systems Research*, 7(1), 111-134.
- Van Grembergen, W., & De Haes, S. (2008). Strategies and models for IT governance. In W. Van Grembergen & S. De Haes (Eds.), *Implementing information technology governance: Models, Practices and Cases*: IGI Publishing, USA.
- Van Grembergen, W., & De Haes, S. (2009). *Enterprise Governance of Information Technology: Achieving Strategic Alignment and Value*. New York: Springer
- Van Grembergen, W., De Haes, S., & Guldentops, E. (2004). Structures, processes and relational mechanisms for IT governance. In W. Van Grembergen (Ed.), *Strategies for Information Technology Governance* (pp. 1-36): Idea Group Publishing, USA.
- Walsham, G., & Sahay, S. (1999). GIS for District-Level Administration in India: Problems and Opportunities. *MIS Quarterly*, 23(1), 39-65.
- Weill, P., & Ross, J. W. (2004). *IT Governance: How Top Performers Manage IT Decision Rights for Superior Results*. Boston, Massachusetts: Harvard Business School Press.

COPYRIGHT

Hafizah Mohamad Hsbollah, Alan Simon & Nick Letch © 2012. The authors assign to ACIS and educational and non-profit institutions a non-exclusive licence to use this document for personal use and in courses of instruction provided that the article is used in full and this copyright statement is reproduced. The authors also grant a non-exclusive licence to ACIS to publish this document in full in the Conference Papers and Proceedings. Those documents may be published on the World Wide Web, CD-ROM, in printed form, and on

mirror sites on the World Wide Web. Any other usage is prohibited without the express permission of the authors.